Muzzle Printometry: A Novel Techniques for Identification and Prediction of Age Determination in Dairy Animals

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The dairy animals play a vital role in socio-economic up-liftment of poorer and weaker sections of the society. There are various banks with cattle insurance companies, District Rural Development agencies (DRDA), NABARD, Intensive Rural Development Programme (IRDP) etc. launched by Government of India. The implementation of these programme have basic pre-requisite about clear, suitable and permanent method of identification with prediction of age of animals for financed or insured under these programmes. Cattle identification also plays an influential role in cattle traceability from birth to slaughter, record preparations, understanding disease trajectories and large-scale cattle ownership management.

Muzzle print images are considered as best suitable biometric identifiers for biometric-based identification and traceability. Various other temporary and permanent methods are ideal under all conditions but have their own limitations and damaging to the animal body. The print of muzzle can be used as a permanent method of identification, which can overcome the limitations as well as check the problem of false identification in case of mis-chief and stealing of animals.

Muzzle pattern is a dermatoglyph trait of distinct linings and grooves of cattle similar to that of fingerprints of human being remains constant with age, used for identification. Muzzle print is also suitable for determining the age of cattle at any age without any limitations. The correlation of muzzle measurements with production traits and varied from breed to breed as well as with various production traits.

The muzzle measurements *viz,* basal length, upper length, distance between nostrils and muzzle characteristics like bead, clustered bead, ridged bead and total converted bead etc. will be studied for developing as a permanent method of identification tool. The various muzzle measurements represented by basal length, upper length distance between nostrils and central length indicated that the muzzle grew horizontally up to certain age of growing phase with substantially higher rate. The rate and age of growth in muzzle varied from breed to breed and species to species (Singh, 1998). So, the muzzle printometry may be a better tools for age determination in dairy animals.

Muzzle characteristics will also significantly associated with production traits. These associations varied from bred to bred as well as species to species. By this technique, it will be easier to establish a correlation between muzzle measurements with production traits. So, it will be helpful in selection of high yielders in early as well as dry stage.

Figure: *Muzzle pattern of cattle*

The muzzle contains spotted or rounded structures on its surface called beads. These beads are in fact sweat glands. The shape of these beads may be round, oval and vary from animal to animal. The shape and allocation of beads, clustered beads remains same throughout the life of animal, the only changes occurs in size and number of beads and this forms the basis of age determination (Pandey, 1979, Ravikumar, 1994). The distance measured centrally between the two nostrils and he measurements of line drawn parallel to the base line along the middle point of second vertical curve is considered as muzzle span, which can be used as the index of age (Pandey 1982). Singh (1998) reported that the correlation of muzzle measurements with production traits and varied from breed to breed as well as with various production traits. The print of muzzle can be used as a permanent method of identification, which can overcome the limitations as well as check the problems of false identification in case of mischief and stealing of animals. Muzzle pattern is a dermatoglyph trait of distinct linings and groove of cattle similar [1-5].

Bibliography

1. Barry B., *et al*. "Using muzzle pattern recognition as a biometric approach for cattle identification". *American Society of Agricultural and Biological Engineers* 50.3 (2007): 1073-1080.

2. Chopade SS and Khire DW. "Use of Muzzle Printometry in Identification, Age Prediction and Production Performance of Surti Buffaloes". *Imperial Journal of Interdisciplinary Research (IJIR)* 2.9 (2016): 745-748.

3. Hamdi A Mahmoud and Hagar Mohamed Reda El Hadad. "Automatic cattle muzzle print classification system using multiclass support vector machine". *International Journal of Image Mining* 1.1 (2015): 126-140.

4. Kawathekar SB. "Study on muzzle printometry in buffalo for identification and age determination". M.V.Sc. Thesis submitted to Maharashtra Animal and Fishery Sciences University, Nagpur (2004).

5. Mishra S. "Studies on the characteristics of muzzle dematoglyphics in dairy cattle and buffalo". Ph. D. Thesis submitted to National Dairy Research Institute (Deemed Univ.), Karnal, Haryana (1994).

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